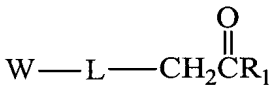
CLAIMS

1/ Functionalized compound of general formula (I) :



(I)

in which

W represents a nucleotide analog,

L represents a linker arm comprising at least four atoms,

R_1 represents a linear or branched alkyl chain.

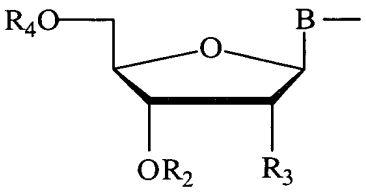
2/ Compound according to claim 1, characterized in that R_1 represents an alkyl chain having at most 6 carbon atoms.

3/ Compound according to claim 2, characterized in that R_1 represents a methyl group.

4/ Compound according to any one of claims 1 to 3, characterized in that L comprises at least eight atoms.

5/ Compound according to any one of claims 1 to 4, characterized in that L is a saturated or unsaturated hydrocarbon-based chain, optionally interrupted by at least one function chosen from amine, amide and oxy functions.

6/ Compound according to any one of claims 1 to 5, characterized in that W corresponds to the general formula (II)



(II)

in which:

- R_2 represents H or a protective group,

- R_3 represents H, F, OH, SH, NH_2, OCH_3 or OR_5 in which R_5 represents a protective group or an alkyl chain,

- R_4 represents an H radical, a protective group or a mono-, di- or triphosphate group,

- W being attached to L via B.

7/ Compound according to claim 6, characterized in that the nitrogen-containing base is cytosine, uracil or adenine.

8/ Compound according to claims 6 and 7, characterized in that R_2 is an H, R_3 is an OH group and R_4 is a triphosphate group.

9/ Compound according to claims 6 and 7, characterized in that R_2 is a 2-cyanoethyl-N,N-diisopropylphosphoramidite group and R_3 is H or OR_5 in which R_5 is a protective group used in oligoribonucleotide synthesis and R_4 is a 4,4'-dimethoxytrityl group.

10/ Functionalized polynucleotide comprising at least one functionalized compound according to any one of the preceding claims.

11/ Functionalized polynucleotide according to claim 10, characterized in that this polynucleotide is prepared by the chemical and/or enzymatic route.

12/ Functionalized polynucleotide according to claim 11, characterized in that this polynucleotide is prepared using an enzymatic amplification reaction.

13/ Labeled functionalized polynucleotide, characterized in that it comprises at least one functionalized compound of general formula (I'):

$$W-[-L-]_n-CH_2COR_1 \qquad (I')$$

in which

W represents a nucleotide analog,

L represents a linker arm comprising at least four atoms,

n represents an index equal to 0 or 1,

R_1 represents a linear or branched alkyl chain,

the alkyl ketone group of said functionalized compound having interacted with a labeling reagent.

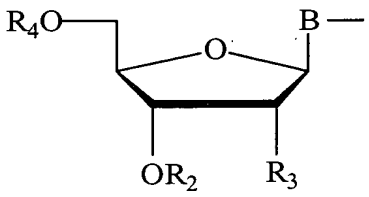
14/ Polynucleotide according to claim 13, characterized in that R_1 represents an alkyl chain having at most 6 carbon atoms.

15/ Polynucleotide according to claim 14, characterized in that R_1 represents a methyl group.

16/ Polynucleotide according to any one of claims 13 to 15, characterized in that L comprises at least eight atoms.

17/ Polynucleotide according to any one of claims 13 to 16, characterized in that L is a saturated or unsaturated hydrocarbon-based chain, optionally interrupted by at least one function chosen from amine, amide and oxy functions.

18/ Polynucleotide according to any one of claims 13 to 17, characterized in that W corresponds to the general formula (II)



(II)

in which:

- R_2 represents H or a protective group,
- R_3 represents H, F, OH, SH, NH_2, OCH_3 or OR_5 in which R_5 represents a protective group or an alkyl chain,
- R_4 represents an H radical, a protective group or a mono-, di- or triphosphate group,
- W being attached to L via B.

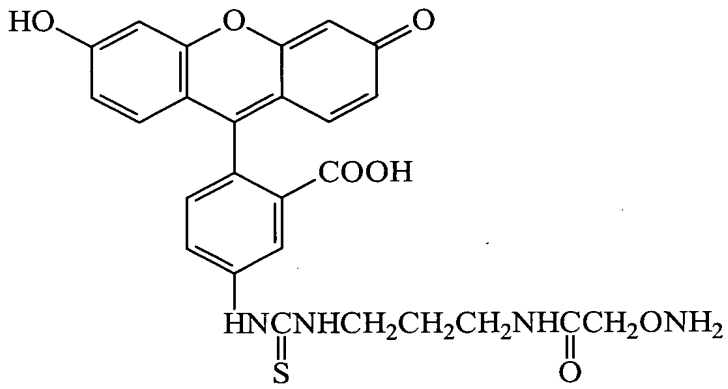
19/ Polynucleotide according to claim 18, characterized in that the nitrogen-containing base is cytosine, uracil or adenine.

20/ Polynucleotide according to claims 18 and 19, characterized in that R_2 is an H, R_3 is an OH group and R_4 is a triphosphate group.

21/ Compound according to claim 18 and 19, characterized in that R_2 is a 2-cyanoethyl-N,N-diisopropylphosphoramidite group and R_3 is H or OR_5 in which R_5 is a protective group used in oligoribonucleotide synthesis and R_4 is a 4,4'-dimethoxytrityl group.

22/ Polynucleotide according to any one of claims 13 to 21, characterized in that the labeling reagent comprises a hydrazine or alkoxyamine function.

23/ Polynucleotide according to claim 22, characterized in that the labeling reagent is



24/ Method for detecting a target nucleic acid, characterized in that this target nucleic acid is brought into contact with at least one functionalized nucleotide as defined in any one of claims 13 to 21, in the presence of elements and under conditions required for producing a polynucleotide, so as to produce a functionalized polynucleotide; the polynucleotide obtained is labeled with a labeling reagent; and then said labeled polynucleotide is detected.

25/ Method according to claim 24, characterized in that the functionalized polynucleotide is obtained using an enzymatic amplification reaction.

26/ Method for detecting a target nucleic acid, characterized in that this target nucleic acid is brought into contact with a functionalized polynucleotide according to any one of claims 10 to 12; the labeling reagent is reacted; and the presence of the target nucleic acid is detected.

27/ Method for detecting a target nucleic acid, characterized in that a labeled polynucleotide according to any one of claims 13 to 23 is available for use, this target nucleic acid is brought into contact with the

labeled polynucleotide; and the presence of the target nucleic acid is detected.